

PENT COOPERATION TREA

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION
(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 29 September 1999 (29.09.99)	To: Assistant Commissioner for Patents United States Patent and Trademark Office Box PCT Washington, D.C.20231 ÉTATS-UNIS D'AMÉRIQUE
International application No. PCT/IL98/00615	Applicant's or agent's file reference a715-75-M
International filing date (day/month/year) 17 December 1998 (17.12.98)	Priority date (day/month/year) 28 December 1997 (28.12.97)
Applicant MAOR, Zeev et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

21 July 1999 (21.07.99)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Lazar Joseph Panakal Telephone No.: (41-22) 338.83.38
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PENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference a715-75-M	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/IL 98/ 00615	International filing date (day/month/year) 17/12/1998	(Earliest) Priority Date (day/month/year) 28/12/1997
Applicant DEAD SEA LABORATORIES LTD. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :
 - contained in the international application in written form.
 - filed together with the international application in computer readable form.
 - furnished subsequently to this Authority in written form.
 - furnished subsequently to this Authority in computer readable form.
 - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. Certain claims were found unsearchable (See Box I).

3. Unity of invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

/IL 98/00615

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K7/48 A61K7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 217 975 A (BIENER, H. PROF. DR.) 15 April 1987 see column 2, line 47-55; claims 1,7,8 ----	1-3
Y	FR 2 242 971 A (ELECTONIC) 4 April 1975 see page 3, line 26-35; claim 1 ----	1-3
A	PATENT ABSTRACTS OF JAPAN vol. 096, no. 008, 30 August 1996 & JP 08 104607 A (HASUNUMA KYOTARO;HANAOKA SHUSUKE), 23 April 1996 see abstract ----	1
A	EP 0 783 881 A (BEIERSDORF) 16 July 1997 see page 12, line 32-33; claim 1 -----	1

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority, claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

20 April 1999

Date of mailing of the international search report

27/04/1999

Name and mailing address of the ISA

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Beyss, E

INTERNATIONAL SEARCH REPORT

In on on patent family members

International Application No

IL 98/00615

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 217975	A 15-04-1987	AT 69954 T		15-12-1991
		CA 1283853 A		07-05-1991
		US 4943432 A		24-07-1990
FR 2242971	A 04-04-1975	NONE		
EP 783881	A 16-07-1997	DE 19548015 A		26-06-1997
		JP 9175973 A		08-07-1997

PATENT COOPERATION TREATY

ECD 13 APR 2000

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16

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference a715-75-M	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IL98/00615	International filing date (day/month/year) 17/12/1998	Priority date (day/month/year) 28/12/1997	
International Patent Classification (IPC) or national classification and IPC A61K7/48			
Applicant DEAD SEA LABORATORIES LTD. et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 21/07/1999	Date of completion of this report 10.04.00
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Pregetter, M Telephone No. +49 89 2399 8719



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IL98/00615

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-5,8 as originally filed

6,7,9 as received on 07/01/2000 with letter of 02/01/2000

Claims, No.:

1-8 as received on 07/01/2000 with letter of 02/01/2000

2. The amendments have resulted in the cancellation of:

the description, pages:
 the claims, Nos.:
 the drawings, sheets:

3. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

see separate sheet

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 8,9
	No:	Claims 1-7
Inventive step (IS)	Yes:	Claims 8,9
	No:	Claims 1-7
Industrial applicability (IA)	Yes:	Claims 1-9
	No:	Claims

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IL98/00615

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL98/00615

Re Item I

Basis of the report

The amendments filed with the letter dated 02.01.2000 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.

Amendments are only allowable if the newly introduced feature can be directly and unambiguously derived from the original application. The value of 12%, introduced into claim 1 is not disclosed in the application as filed.

The amendments carried out on page 6 lead to a major clarity problem. It now stated that Dead Sea water has a certain ion composition combined with a "Total Dissolved Salt" value of 25% - 40%.

However, the sum of the lowest values for the ions, as given on page 6, adds up to a value of over 40%.

Furthermore, there is an inconsistency between the values for the ion concentrations on page 6 and of the concentrations for the Dead Sea water on page 2.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Since the filed amendments cannot be accepted (cf. item I), the basis for the examination on novelty, inventive step and industrial applicability is the application as filed.

The objection raised in the Written Opinion are still valid:

2. The following document (D) is cited by the examiner. It was not cited in the international search report:

D1: US-A-5340571

2. The subject-matter of the present claim 1 is not considered to be novel (Article 33(2) PCT).

The very vague wording of claim 1 gives raise to a very broad interpretation (see

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL98/00615

section VIII).

Document D1 describes in col. 1, l. 50-59 two gel compositions which include all the compounds defined in claim 1 of the present application. The last item is "water". Since it is not stated that distilled or deionized "water" is used, it can be assumed that this "water" contains salts. Furthermore, potassium and sodium ions are present in the final composition. Therefore the compositions of D3 are considered to novelty destroying for the present claim 1.

4. The subject-matter of the present claim 8 is considered to be novel and inventive according to articles 33(2) and 33(3) PCT.

5. The problem to be solved by the present application, as stated on p. 3, l. 14-17, cannot be taken into consideration, since it is clear from the present claim 1 that the composition can contain extremely small amounts of minerals.

Re Item VIII

Certain observations on the international application

1. A claim has to contain the subject-matter for which protection is sought and such subject-matter must be directly derivable from reading the claim (alone, without referring to the description) (cf. Article 6 PCT).

Furthermore, the description must be clear (Article 5 PCT) and the claims must be fully supported by the description (Article 6 PCT).

2. The term "Dead Sea water" used in claims 1 and 8 is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT).

On page 6 line 7-8 the term "Dead Sea water" is defined as any water with a Total-Dissolved-Salt-Value between 25% and 40%.

There is neither a specification concerning the ratio of certain ions nor, at least, a requirement for any special ions.

The unacceptable amendments, filed with the letter of 02.01.2000 lead to even bigger unclarities about the term "Dead Sea water" (cf. Item I).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL98/00615

The present claim 1 refers to "up to 80% w/w Dead Sea water". Further "water" is added to "complete up to 100%". The present wording of claim 1 could refer to any gel composition made with "normal" tap water. In the final composition it is not possible to distinguish if some "salty" water has been diluted with water or if water with some dissolved salts was added initially.

Furthermore, in this very broad context, the terms "hydrophobic and/or hydrophilic active agents" cannot be interpreted unambiguously. Distilled water may be considered an "active agent", for example, to dissolve salts.

3. The dependencies of the claims 6 and 7 are not correct, since the fragrance and the antioxidant are only mentioned in claim 5 and are not present in claims 1-4.

4. The percentage values of claim 6 and as described on page 7 are not correct, since a gel composition with up to 100% w/w water cannot exist and furthermore the highest values for the Dead Sea water and the deionized water would add to give already 180%. Probably the deionized water should be used to complete the composition to 100%.

The gelling agents which may be used in the present invention are: Guar gum, hydroxyethylcellulose, hydroxypropyl methylcellulose, methylcellulose, magnesium aluminum silicate and xanthan gum, though any appropriate viscosity modifying substance may be used.

The solubilizers used in the present invention are nonionic compounds such as tween- 20 or 80 oleth - 20, ceteth -20 and PEG-hydrogenated castor oils -36,40,60.

In the present invention the term "Dead Sea water" relates to any water with a TDS (Total Dissolved Salt) value between 25% and 40%. This value is typical for the water in the Dead Sea, and varies slightly depending on the depth and location from which the water is taken.

The composition of Dead Sea minerals is unique. The concentration of divalent cations, magnesium and calcium is very high in comparison with other sea water and the ionic strength of the solution is very high. The major constituents of Dead Sea Water referred to in the present invention, as assessed by a water analysis carried out by the Geological Survey of Israel, are:

Calcium (Ca+2)	36000 - 40000 mg/l
Chloride (Cl-)	320000 - 370000 mg/l
Magnesium (Mg+2)	90000 - 95000 mg/l
Potassium (K+)	1300 - 1500 mg/l
Sodium (Na +)	1500 - 2500 mg/l
Bromide (Br-)	11000 - 12000 mg/l

The composition of the present invention comprises Dead Sea water, hydrophobic or hydrophilic active agents, or any mixture thereof, gelling agents or any other viscosity modifiers a solubilizer and water, preferably, deionized water.

The said composition may further comprise anti oxidants and fragrances. The antioxidants may be BHA, BHT, tocopherol, tetrasodium EDTA or any combination thereof and the fragrance may be synthetic fragrances or an aromatic oil such as lavender oil, patchouli oil and sandalwood oil or any combination thereof.

The basic formula of the composition of the present invention is:

Dead Sea water	30.0 - 80.0% w/w
solubilizer	up to 4.0% w/w
hydrophilic active agent	up to 3.0% w/w
gelling agent	0.7 - 1.2% w/w
hydrophobic active agent	up to 0.8% w/w
fragrance	up to 0.4% w/w
anti oxidant	0.05 - 0.2% w/w
deionized water	up to 100% w/w

The present invention further relates to a method for the preparation of the said composition. The basic method comprises the following steps:

- a) heating the mixture of hydrophobic active agent and solubilizer to approximately 40°C while mixing; adding a mixture (at room temperature) of 15% w/w water and 30.0% w/w Dead Sea water, and heating again to approximately 40°C while mixing;
- b) in a different receptacle mixing the remaining Dead Sea water, water and gelling agent and heating to approximately 60°C while mixing, cooling to 40°C after receiving a clear solution;
- c) adding the product of step b) to the product of step a) while mixing, and cooling to room temperature.

Further additions, to the basic formula of Dead Sea water, hydrophobic active agents, solubilizer and water, according to specific requirements, comprise a prior step of adding to the above mentioned step a) anti oxidants and/or fragrances together with the hydrophobic active agent and solubilizer, and step b) further comprises adding the hydrophilic active agent together with the gelling agent (or any other viscosity modifier) and the remaining water and Dead Sea water.

Formula I	Dead Sea water	75.0% w/w
	oleth-20	3.0% w/w
	glycereth-26	2.0% w/w
	hydroxyethylcellulose	0.8% w/w
	vitamin E-acetate	
	(tocopheryl acetate)	0.3% w/w
	lavender oil	0.3% w/w
	BHA	0.1% w/w
	deionized water	up to 100%
 Formula II		
	Dead Sea water	50.0% w/w
	oleth-20	2.0% w/w
	glycerin	3.0% w/w
	hydroxyethylcellulose	1.0% w/w
	vitamin A-palmitate	
	(retinyl palmitate)	0.2% w/w
	patchouli oil	0.2% w/w
	BHA	0.1% w/w
	deionized water	up to 100%
 Formula III		
	Dead Sea water	30.0% w/w
	oleth-20	4.0% w/w
	glycereth-26	2.0% w/w
	hydroxyethylcellulose	0.8% w/w
	vitamin E acetate	0.6% w/w
	sandalwood oil	0.2% w/w
	BHA	0.1% w/w
	deionized water	up to 100%

Claims

- 1) A gel composition useful for skin care and protection comprising up to 80% w/w Dead Sea water, hydrophobic and/or hydrophilic active agents, solubilizers, gelling agents or viscosity modifiers and water to complete up to 100%.
- 2) A composition according to claim 1 wherein the composition is a clear liquid gel.
- 3) A gel composition according to claim 1 wherein the hydrophobic active agent is selected from, vegetable oils, free fatty acids and vitamins; the hydrophilic active agent is selected from humectants, α - hydroxy acids, anti irritant agents, plant extracts, moisturizing agents and hydrolyzed plant proteins; the solubilizer is selected from tween- 20, oleth - 20, tween - 80, ceteth -20 and PEG-hydrogenated castor oils -36,40 and 60 and the gelling agent or viscosity modifier is selected from Guar gum, hydroxyethylcellulose, hydroxypropyl methylcellulose, methylcellulose, magnesium aluminum silicate and xanthan gum.
- 4) A gel composition according to claim 1 wherein the water is deionized water.
- 5) A gel composition according to claim 1 further comprising antioxidants and fragrances.

- 6) A gel composition according to the preceding claims wherein the composition contains

Dead Sea water	30.0 - 80.0% w/w
solubilizer	up to 4.0% w/w
hydrophilic active agent	up to 3.0% w/w
gelling agent	0.7 - 1.2% w/w
hydrophobic active agent	up to 0.8% w/w
fragrance	up to 0.4% w/w
anti oxidant	0.05 - 0.2% w/w
deionized water	up to 100% w/w

- 7) A gel composition according to the preceding claims wherein the antioxidants are selected from BHA, BHT, tocopherol, tetrasodium EDTA and the fragrance is a synthetic fragrance or an aromatic oil selected from lavender oil, patchouli oil and sandalwood oil.

- 8) A method for the preparation of the composition according to the preceding claims, comprising;

- a) heating the mixture of hydrophobic active agent and solubilizer to approximately 40°C while mixing; adding a mixture, at room temperature, of 15%w/w water and 30.0% w/w Dead Sea water, and heating again to approximately 40°C while mixing;
- b) in a different receptacle mixing the remaining water, Dead Sea water and gelling agent and heating to approximately 60°C while mixing, cooling to 40°C after receiving a clear solution;
- c) adding the product of step b) to the product of step a) while mixing, and cooling to room temperature.

9) A method according to claim 8 wherein step a) further comprises a prior step of adding antioxidants and/or fragrance to the hydrophobic active agent and solubilizer, and step b) further comprises adding the hydrophilic active agent together with the gelling agent and the remaining water and Dead Sea water.

~~Claims~~ We claim(s):

- 1) A gel composition useful for skin care and protection comprising 30% to 80% w/w Dead Sea water; hydrophobic active agent selected from vegetable oils, free fatty acids and vitamins; and/or hydrophilic active agent selected from humectants, α - hydroxy acids, anti irritant agents, plant extracts, moisturizing agents and hydrolyzed plant proteins; solubilizers; gelling agents or viscosity modifiers; and deionized water to complete up to 100%.
- 2) A composition according to claim 1 wherein the composition is a clear liquid gel.
- 3) A gel composition according to claim 1 wherein the solubilizer is selected from tween- 20, oleth - 20, tween - 80, ceteth -20 and PEG-hydrogenated castor oils -36,40 and 60 and the gelling agent or viscosity modifier is selected from Guar gum, hydroxyethylcellulose, hydroxypropyl methylcellulose, methylcellulose, magnesium aluminum silicate and xanthan gum.
- 4) A gel composition according to claim 1 further comprising antioxidants and fragrances.
- 5) A gel composition according to the claim 4 wherein the composition contains the following components in weight percent,

A/	Dead Sea water	30.0 - 80.0% w/w
✓	solubilizer	up to 4.0% w/w
✓	hydrophilic active agent	up to 3.0% w/w
D ✓	gelling agent	0.7 - 1.2% w/w
✓	hydrophobic active agent	up to 0.8% w/w
✓	fragrance	up to 0.4% w/w
✓	anti oxidant	0.05 - 0.2% w/w

and deionized water to complete to 100%.

- 6) A gel composition according to claim 4 wherein the antioxidants are selected from BHA, BHT, tocopherol, tetrasodium EDTA and the fragrance is a synthetic fragrance or an aromatic oil selected from lavender oil, patchouli oil and sandalwood oil.
- 7) A method for the preparation of the composition according to the preceding claims, comprising;
- heating the mixture of hydrophobic active agent and solubilizer to approximately 40°C while mixing; adding a mixture, at room temperature, of 15%w/w water and 30.0% w/w Dead Sea water, and heating again to approximately 40°C while mixing;
 - in a different receptacle mixing the remaining water, Dead Sea water and gelling agent and heating to approximately 60°C while mixing, cooling to 40°C after receiving a clear solution;
 - adding the product of step b) to the product of step a) while mixing, and cooling to room temperature.
- 8) A method according to claim 7 wherein step a) further comprises a prior step of adding antioxidants and/or fragrance to the hydrophobic active agent and solubilizer, and step b) further comprises adding the hydrophilic active agent together with the gelling agent and the remaining water and Dead Sea water.

PCT/IL98/00615



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61K 7/48, 7/00		A1	(11) International Publication Number: WO 99/33443 (43) International Publication Date: 8 July 1999 (08.07.99)
<p>(21) International Application Number: PCT/IL98/00615</p> <p>(22) International Filing Date: 17 December 1998 (17.12.98)</p> <p>(30) Priority Data: 122776 28 December 1997 (28.12.97) IL</p> <p>(71) Applicant (<i>for all designated States except US</i>): DEAD SEA LABORATORIES LTD. [IL/IL]; Mitzpe Shalem, 86983 Mobile Post Dead Sea (IL).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (<i>for US only</i>): MAOR, Zeev [IL/IL]; Kalya, 90666 Dead Sea (IL). YEHUDA, Shaul [IL/IL]; Mitzpe Shalem, 86983 Mobile Post Dead Sea (IL). MAGDASSI, Shlomo [IL/IL]; Hanerd 36, 96626 Jerusalem (IL). KOGAN, Assia [IL/IL]; Brazil 26, 96784 Jerusalem (IL).</p> <p>(74) Agent: NOAM, Meir, P.O. Box 34335, 91342 Jerusalem (IL).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published</p> <p><i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	

(54) Title: A GEL COMPOSITION FOR SKIN CARE AND PROTECTION AND A METHOD FOR PREPARATION THEREOF

(57) Abstract

The present invention relates to a gel composition useful for skin care and protection comprising up to 80 % w/w Dead Sea water, hydrophobic and/or hydrophilic active agents, solubilizers, gelling agents or viscosity modifiers and water to complete up to 100 %. Preferably, the composition is a clear liquid gel. In the composition of the present invention the hydrophobic active agents may be vegetable oils, free fatty acids or vitamins, or any combination thereof and the hydrophilic active agent may be humectants, α -hydroxy acids, anti irritant agents, plant extracts, moisturizing agents or hydrolyzed plant proteins or any combination thereof. The gel may further comprise antioxidants and fragrances. The present invention further relates to a method for the preparation of the said composition.

A GEL COMPOSITION FOR SKIN CARE AND PROTECTION AND A METHOD FOR PREPARATION THEREOF

Field of the Invention

The present invention generally relates to a gel composition useful for skin care and protection, and to a method for its preparation. More specifically, the present invention relates to a novel liquid gel composition comprising up to 80% w/w Dead Sea water and hydrophobic or hydrophilic active agents, such as vegetable oils, free fatty acids, vitamins, humectants, α - hydroxy acids, anti irritant agents, plant extracts, moisturizing agents and hydrolyzed plant proteins, or any combination thereof.

The gel composition of the present invention provides a vehicle of highly concentrated Dead Sea minerals and active agents to the skin preferably in the form of a clear gel.

Background of the Invention

The skin, which is composed of three layers differing in their cell types and special functions; an overlaying epithelial layer (epidermis), an underlying connective tissue matrix (dermis) and adipose tissue (hypodermis), is the largest organ in the body and serves as, *inter alia*, a protective barrier from the external environment, impeding the entry of microorganisms, absorption of radiation and loss of water.

Physiologists assume that specific ions from minerals play important roles, mainly in the metabolism of healthy skin, mainly as co factors in enzymatic regulation activities. For example, there are indications that Mg^{+2} is a co factor for phosphate transferring enzymes and participates in cAMP/cATP regulation. Ca^{+2} is thought to regulate cell membrane permeability and K^+ to enhance CO_2 transport. Also, Zn^{+2} may participate as a co factor in cell proliferation enzymatic regulation. In some *in vitro* and *in vivo* tests magnesium bromide, magnesium chloride, and potassium

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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bromide exhibited inhibition of skin cell proliferation after dermal application (Ma'or Z., Magdassi S., Efron D. and Yehuda S. (1996) *Israel Journal of Medical Sciences* 32(supp.3), 28 - 35).

Minerals are capable of restoring moisture due to their hygroscopic characteristics. Minerals, if absorbed into skin cells, may enhance intracellular water capacity, and add water to the skin tissue from within.

Minerals may be absorbed into the skin from brine, from a bath with dissolved salts, or from dermal application of a mineral rich preparation. The skin is a multilayered biomembrane with certain absorption characteristics. As a dynamic living tissue, its absorption parameters are susceptible to constant changes. When applying a cosmetic blend, the most relevant parameter is the concentration cascade between each specific dissolved ion, outside and inside the skin surface. During the absorption process, a partitioning of minerals from the vehicle to skin may occur. The nature of the vehicle, namely the type of cosmetic preparation (e.g. a lipophilic cream or a hydrophilic gel), is significant in determining the kinetics of the process of skin penetration.

About 4 -5% of the human body is made up of minerals. Some skin disorders are related to a specific mineral shortage. It is assumed that specific ions from minerals play an important role in healthy skin metabolism.

The Dead Sea is the richest natural mineral source in the world, with a concentration of 32% (w/v) dissolved minerals and a unique composition.

The main elements found in Dead Sea water are chlorine, magnesium, sodium, calcium, potassium and bromine. For example, the concentration of chlorine in the Dead Sea is 224900 mg/l as opposed to 22900 in the Mediterranean and 19000 in typical ocean water. Magnesium is 44000 mg/l in the Dead Sea as opposed to 1490 and 1350 in the Mediterranean and ocean, respectively. Sodium is 40100 mg/l in the Dead Sea as opposed to 12700 and 10500 in the Mediterranean and ocean, respectively. Calcium is 17200 mg/l in the Dead Sea as opposed to 470 and 400 in the Mediterranean and ocean, respectively. Potassium is 7650 mg/l in the Dead Sea as opposed to 470 and 390 in the Mediterranean and ocean, respectively and bromine

is 5300 mg/l in the Dead Sea as opposed to 76 and 65 in the Mediterranean and ocean, respectively.

Many people, after bathing in the Dead Sea's salty water, reported a "baby smooth skin" feeling, and it is well known that minerals from the Dead Sea, as sea water, sea bath salts or sea mud have cosmetic and therapeutic effects on the skin (for example see Ma'or Z. and Yehuda S. (1997) *International Journal of Cosmetic Science* 19:105-110). However, treatment with these minerals has several drawbacks. It may be quite expensive and inconvenient for patients to travel to the Dead Sea itself for receiving treatment, and bringing the minerals to the patient's home may prove to be inconvenient. Large amounts of mineral ingredients (10kg Dead Sea mud or salts for each treatment) must be applied and the treatment may be messy (such as treatment with Dead Sea mud). Furthermore, domestic metal pipes may be corrosively attacked while taking a highly concentrated mineral bath.

Many Dead Sea cosmetic preparations sold today actually contain a very small amount of minerals due to technical difficulties in using the highly electrolyte concentrated Dead Sea solutions in cosmetic formulation and due to product stabilization.

The present invention offers a highly concentrated Dead Sea mineral gel which is a superior vehicle of minerals and hydrophobic and hydrophilic active agents that have beneficial effects on the skin, to the cosmetic preparations sold today.

The composition of the present invention has the benefits of treatment with Dead Sea minerals, but none of the drawbacks. It is easy and simple to use and in contrast with the treatments used today, may be in prolonged contact with the skin, enhancing the beneficial effects of the Dead Sea minerals.

Summary of the invention

The present invention relates to a gel composition useful for skin care and protection comprising up to 80% w/w Dead Sea water, hydrophobic and/or hydrophilic active agents, solubilizers, gelling agents or viscosity modifiers and water to complete up to 100%. Preferably, the composition is a clear liquid gel.

In the composition of the present invention the hydrophobic active agents may be vegetable oils, free fatty acids or vitamins, or any combination thereof and the hydrophilic active agent may be humectants, α - hydroxy acids, anti irritant agents, plant extracts, moisturizing agents or hydrolyzed plant proteins or any combination thereof. The gel may further comprise antioxidants and fragrances.

The present invention further relates to a method for the preparation of the said composition, comprising;

- a) heating the mixture of hydrophobic active agent and solubilizer to approximately 40°C while mixing; adding a mixture, at room temperature, of 15%w/w water and 30.0% w/w Dead Sea water, and heating again to approximately 40°C while mixing;
- b) in a different receptacle mixing the remaining water, Dead Sea water and gelling agent and heating to approximately 60°C while mixing, cooling to 40°C after receiving a clear solution;
- c) adding the product of step b) to the product of step a) while mixing, and cooling to room temperature.

According to specific requirements, a) may further comprise a prior step of adding antioxidants and/or fragrance to the hydrophobic active agent and solubilizer, and step b) may further comprise adding the hydrophilic active agent together with the gelling agent and the remaining water and Dead Sea water.

Detailed description of the invention

The present invention relates to a composition comprising up to 80% Dead Sea water, hydrophobic and/or hydrophilic active agents, solubilizers and gelling agents or any viscosity modifiers for care of skin conditions, such as wrinkles, for retaining skin moisture, and for care of skin related diseases.

The nomenclature used in the present invention to describe agents and compounds used in the present compositions, is the INCI nomenclature.

Hydrophilic active agents which may be used in the composition of the present invention may be humectants, such as glycerin, glycereth - 7 or 12 or 26, butylene glycol, propylene glycol, panthenol, sorbitol and sorbitan laureth, or α - hydroxy acids, such as citric acid, lactic acid, glycolic acid and malic acid or anti irritant agents, such as allantoin, PEG - 28 or PEG - 82 glycetyl tollowate or plant extracts, such as aloe barbadensis extract or gel, balm mint extract, Calendula officinalis extract, Fenugreek extract Ginseng extract, Horse chesnut extract, Ivy extract, Jujube extract, Matricaria extract and Witch hazel extract, or moisturizing agents, such as sodium hyaluronate, sodium PCA, sodium lactate, glycolipids, ceramides, sphingolipids and phospholipids and hydrolyzed plant proteins, such as hydrolyzed soy protein, hydrolyzed silk protein, hydrolyzed wheat protein, and hydrolyzed rice protein.

Hydrophobic active agents which may be used in the composition of the present invention may be vegetable oils such as avocado oil, borage oil, evening primrose oil, jojoba oil, palm kernel oil, rosehip oil, sunflower oil and wheat germ oil, or free fatty acids that are useful as moisturizers, such as ascorbic acid, linoleic acid and linolenic acid, or vitamins useful for treating skin aging effects such as ascorbyl palmitate, retinol, retinyl acetate, retinyl palmitate, retinyl propionate, tocopheryl acetate and tocopheryl linoleate.

The gelling agents which may be used in the present invention are: Guar gum, hydroxyethylcellulose, hydroxypropyl methylcellulose, methylcellulose, magnesium aluminum silicate and xanthan gum, though any appropriate viscosity modifying substance may be used.

The solubilizers used in the present invention are nonionic compounds such as tween- 20 or 80 oleth - 20, ceteth -20 and PEG-hydrogenated castor oils -36,40,60.

In the present invention the term "Dead Sea water" relates to any water with a TDS (Total Dissolved Salt) value between 25% and 40%. This value is typical for the water in the Dead Sea, and varies slightly depending on the depth and location from which the water is taken.

The composition of Dead Sea minerals is unique. The concentration of divalent cations, magnesium and calcium is very high in comparison with other sea water and the ionic strength of the solution is very high. The major constituents of Dead Sea Water referred to in the present invention, as assessed by a water analysis carried out by the Geological Survey of Israel, are:

Calcium (Ca+2)	36000 - 40000 mg/l
Chloride (Cl-)	320000 - 370000 mg/l
Magnesium (Mg+2)	90000 - 95000 mg/l
Potassium (K+)	1300 - 1500 mg/l
Sodium (Na +)	1500 - 2500 mg/l
Bromide (Br-)	11000 - 12000 mg/l

The composition of the present invention comprises Dead Sea water, hydrophobic or hydrophilic active agents, or any mixture thereof, gelling agents or any other viscosity modifiers a solubilizer and water, preferably, deionized water.

The said composition may further comprise anti oxidants and fragrances. The antioxidants may be BHA, BHT, tocopherol, tetrasodium EDTA or any combination thereof and the fragrance may be synthetic fragrances or an aromatic oil such as lavender oil, patchouli oil and sandalwood oil or any combination thereof.

The basic formula of the composition of the present invention is:

Dead Sea water	30.0 - 80.0% w/w
solubilizer	up to 4.0% w/w
hydrophilic active agent	up to 3.0% w/w
gelling agent	0.7 - 1.2% w/w
hydrophobic active agent	up to 0.8% w/w
fragrance	up to 0.4% w/w
anti oxidant	0.05 - 0.2% w/w
deionized water	up to 100% w/w

The present invention further relates to a method for the preparation of the said composition. The basic method comprises the following steps:

- a) heating the mixture of hydrophobic active agent and solubilizer to approximately 40°C while mixing; adding a mixture (at room temperature) of 15% w/w water and 30.0% w/w Dead Sea water, and heating again to approximately 40°C while mixing;
- b) in a different receptacle mixing the remaining Dead Sea water, water and gelling agent and heating to approximately 60°C while mixing, cooling to 40°C after receiving a clear solution;
- c) adding the product of step b) to the product of step a) while mixing, and cooling to room temperature.

Further additions, to the basic formula of Dead Sea water, hydrophobic active agents, solubilizer and water, according to specific requirements, comprise a prior step of adding to the above mentioned step a) anti oxidants and/or fragrances together with the hydrophobic active agent and solubilizer, and step b) further comprises adding the hydrophilic active agent together with the gelling agent (or any other viscosity modifier) and the remaining water and Dead Sea water.

The composition prepared according to this method may be used as a substitute for bath salts, and the reported "baby smooth skin" feeling when using Dead sea water is achieved without having to use large amounts of salts, and without exposing the domestic pipes to the corrosive effect of these salts. The present composition offers the added benefit of being able to "wear" the composition on the skin for many hours, thus being exposed to the benefits of the Dead Sea minerals for a longer time, enhancing their action towards skin care and protection.

The method of the present invention achieves solubilizing a hydrophobic agent in water which is highly concentrated with salts. Furthermore, the composition of the present invention is unique in that it may be a clear, transparent gel.

Transparency of the gel has important esthetic benefits; the clear transparent product may be sold in a transparent package showing off the homogeneity of the product. Also, colored active agents may be added to the gel for beauty in an encapsulated form.

Therefore, the composition of the present invention provides a superior vehicle of highly concentrated Dead Sea minerals and hydrophobic or hydrophilic active agents to the skin in the form of an esthetically superior clear gel.

The said invention will be further illustrated by the following examples. These examples do not intend to limit the scope of the invention but to demonstrate and clarify it only.

Examples

The following formulas of the present composition were prepared, formed a gel and were found stable for 4 weeks at 45°C. Formula I formed a clear transparent gel.
(the nomenclature used in the following examples are INCI names):

Formula I	Dead Sea water	75.0% w/w
	oleth-20	3.0% w/w
	glycereth-26	2.0% w/w
	hydroxyethylcellulose	0.8% w/w
	vitamin E-acetate (tocopheryl acetate)	0.3% w/w
	lavender oil	0.3% w/w
	BHA	0.1% w/w
	deionized water	up to 100%
 Formula II	 Dead Sea water	 50.0% w/w
	oleth-20	2.0% w/w
	glycerin	3.0% w/w
	hydroxyethylcellulose	1.0% w/w
	vitamin A-palmitate (retinyl palmitate)	0.2% w/w
	patchouli oil	0.2% w/w
	BHA	0.1% w/w
	deionized water	up to 100%
 Formula III	 Dead Sea water	 30.0% w/w
	oleth-20	4.0% w/w
	glycereth-26	2.0% w/w
	hydroxyethylcellulose	0.8% w/w
	vitamin E acetate	0.6% w/w
	sandalwood oil	0.2% w/w
	BHA	0.1% w/w
	deionized water	up to 100%

Claims

- 1) A gel composition useful for skin care and protection comprising up to 80% w/w Dead Sea water, hydrophobic and/or hydrophilic active agents, solubilizers, gelling agents or viscosity modifiers and water to complete up to 100%.
- 2) A composition according to claim 1 wherein the composition is a clear liquid gel.
- 3) A gel composition according to claim 1 wherein the hydrophobic active agent is selected from, vegetable oils, free fatty acids and vitamins; the hydrophilic active agent is selected from humectants, α - hydroxy acids, anti irritant agents, plant extracts, moisturizing agents and hydrolyzed plant proteins; the solubilizer is selected from tween- 20, oleth - 20, tween - 80, ceteth -20 and PEG-hydrogenated castor oils -36,40 and 60 and the gelling agent or viscosity modifier is selected from Guar gum, hydroxyethylcellulose, hydroxypropyl methylcellulose, methylcellulose, magnesium aluminum silicate and xanthan gum.
- 4) A gel composition according to claim 1 wherein the water is deionized water.
- 5) A gel composition according to claim 1 further comprising antioxidants and fragrances.

- 6) A gel composition according to the preceding claims wherein the composition contains

Dead Sea water	30.0 - 80.0% w/w
solubilizer	up to 4.0% w/w
hydrophilic active agent	up to 3.0% w/w
gelling agent	0.7 - 1.2% w/w
hydrophobic active agent	up to 0.8% w/w
fragrance	up to 0.4% w/w
anti oxidant	0.05 - 0.2% w/w
deionized water	up to 100% w/w

- 7) A gel composition according to the preceding claims wherein the antioxidants are selected from BHA, BHT, tocopherol, tetrasodium EDTA and the fragrance is a synthetic fragrance or an aromatic oil selected from lavender oil, patchouli oil and sandalwood oil.

- 8) A method for the preparation of the composition according to the preceding claims, comprising;

- a) heating the mixture of hydrophobic active agent and solubilizer to approximately 40°C while mixing; adding a mixture, at room temperature, of 15%w/w water and 30.0% w/w Dead Sea water, and heating again to approximately 40°C while mixing;
- b) in a different receptacle mixing the remaining water, Dead Sea water and gelling agent and heating to approximately 60°C while mixing, cooling to 40°C after receiving a clear solution;
- c) adding the product of step b) to the product of step a) while mixing, and cooling to room temperature.

9) A method according to claim 8 wherein step a) further comprises a prior step of adding antioxidants and/or fragrance to the hydrophobic active agent and solubilizer, and step b) further comprises adding the hydrophilic active agent together with the gelling agent and the remaining water and Dead Sea water.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL 98/00615

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K7/48 A61K7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 217 975 A (BIENER, H. PROF. DR.) 15 April 1987 see column 2, line 47-55; claims 1,7,8 ---	1-3
Y	FR 2 242 971 A (ELECTONIC) 4 April 1975 see page 3, line 26-35; claim 1 ---	1-3
A	PATENT ABSTRACTS OF JAPAN vol. 096, no. 008, 30 August 1996 & JP 08 104607 A (HASUNUMA KYOTARO;HANAOKA SHUSUKE), 23 April 1996 see abstract ---	1
A	EP 0 783 881 A (BEIERSDORF) 16 July 1997 see page 12, line 32-33; claim 1 -----	1

Further documents are listed in the continuation of box C

Patent family members are listed in annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IL 98/00615

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
EP 217975	A 15-04-1987	AT 69954 T	CA 1283853 A	US 4943432 A	15-12-1991 07-05-1991 24-07-1990
FR 2242971	A 04-04-1975	NONE			
EP 783881	A 16-07-1997	DE 19548015 A	JP 9175973 A		26-06-1997 08-07-1997